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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Craig Andrews

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STREETS & STEELE
13831 NORTHWEST FREEWAY
SUITE 355
HOUSTON, TX 77040

EXAMINER

PARSONS, THOMAS H

ART UNIT

PAPER NUMBER

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/03/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/732,891	Applicant(s) ANDREWS, CRAIG	
	Examiner Thomas H. Parsons	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-74 is/are pending in the application.
- 4a) Of the above claim(s) 12-15, 18, 22-29, 33-58 and 62-74 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 16, 17, 19-21, 30-32 and 59-61 is/are rejected.
- 7) ☒ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>02/17/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 12-15, 18, 22-29, 33-58, and 62-74 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species and invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 2 June 2006.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 6, 8-9, 30, and 59-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Watkins et al. (5,200,278).

Claim 1: Watkins et al. in Figures 4, 5 and 7 disclose an apparatus (200), comprising: a reactant gas accumulator (128 or 176) in fluid communication with a reactant gas manifold (54 or 74) of a fuel cell (10) (col. 2: 6-28, col. 7: 11-48, and col. 8: 1-col. 9: 8).

Claim 2: Watkins et al. in Figures 4, 5, and 7 further disclose a reactant gas source (112 or 162) in selective fluid communication with an inlet manifold (54 or 74) of the fuel cell (10), wherein the inlet manifold (54 or 74) and an outlet manifold (62 or 82) are in fluid communication (col. 2: 6-28, col. 7: 11-48, and col. 8: 1-col. 9: 8).

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Claim 3: Watkins et al. in Figures 3, 4 and 5 further disclose that inlet manifold and an outlet manifold are in fluid communication across an electrode of the fuel cell (col. 2: 6-28, and col. 7: 11-48).

Claim 4: Watkins et al. further disclose a pressure regulator disposed between the reactant gas source and the inlet manifold (col. 2: 60-col. 3: 5).

Claim 6: Watkins et al. in Figure 7 further disclose a control valve (66) disposed between the reactant gas source and the inlet manifold (col. 8: 13-14 and 48-49).

Claim 8: Watkins et al. in Figure 7 further disclose flow control valve disposed between the reactant gas source and the inlet manifold to control the flow rate of the reactant gas (col. 8: 13-14 and 48-49).

Claim 9: Watkins et al. in Figure 7 further disclose a sensor (thermocouple 172) capable of measuring an operating condition or parameter of the system (col. 8: 56-61).

Claim 30: Watkins et al. in Figure 7 further disclose that the accumulator includes a surplus water dump system (col. 8: 20-29 and col. 8: 62-col. 9:8).

Claim 59: Watkins et al. in figures 4, 5 and 7 disclose an apparatus (200), comprising: an oxidant gas accumulator (176) in fluid communication with an oxidant gas outlet manifold (82) of a fuel cell (10); and a fuel gas accumulator (128) in fluid communication with a fuel gas outlet manifold (62) of the fuel cell (10) (col. 2: 6-28, col. 7: 11-48, and col. 8: 1-col. 9: 8).

Claim 60: Watkins et al. further disclose that the oxidant gas comprises oxygen and the fuel gas comprises hydrogen (col. 2: 60-68).

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Claim 61: Watkins et al. further disclose a pressure regulator disposed between an oxidant gas source and an oxidant gas inlet manifold; and a pressure regulator disposed between a fuel gas source and a fuel gas inlet manifold (col. 2: 67-col. 8: 2).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5, 7, 11 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins et al. as applied to claims 1 and 2 above, and further in view of Merritt et al. (5,441,821).

Watkins et al. are as applied, argued, and disclosed above, and incorporated herein.

Claim 5: Watkins et al. do not disclose a pressure controller disposed between the reactant gas source and the inlet manifold, wherein the pressure controller is capable of varying the velocity of the reactant gas provided to the inlet manifold.

Merritt et al. in Figure 1 disclose a pressure controller (122 and 132) disposed between the reactant gas source (120 and 150) and the inlet manifold, wherein the pressure controller is capable of varying the velocity of the reactant gas provided to the inlet manifold (abstract, col. 7: 11-col. 8: 59).

Claim 7: Watkins et al. do not disclose a valve selected from a solenoid valve, pneumatically driven valve, a pilot operated valve, and a motor driven valve.

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Merritt et al. in Figure 1 disclose a valve selected from a solenoid valve, pneumatically driven valve, a pilot operated valve, and a motor driven valve (col. 7: 62-col. 8: 6).

Claim 11: Watkins et al. do not disclose a sensor that measure the flow rate of the reactant gas through the fuel cell.

Merritt et al. in Figure 1 disclose a sensor (i.e. a pressure transducer) that measure the flow rate of the reactant gas through the fuel cell (col. 7: 61-col. 8: 6).

Claim 31: Watkins et al. do not disclose a valve controller in communication with a valve for providing the selective communication between the reactant gas source and the inlet manifold.

Merritt et al. in Figure 1 disclose a valve controller (132) in communication with a valve (122) for providing the selective communication between the reactant gas source and the inlet manifold.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of Watkins et al. by incorporating the pressure controller, flow rate sensor, and valve controller of Merritt et al. because Merritt et al. disclose a pressure controller and flow rate sensor that would have provided a means to maintain a uniform fuel recirculation ratio and a balance between the pressure of the fuel stream and the pressure of the oxidant stream thereby improving the overall performance and efficiency of the apparatus.

6. Claims 10, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins et al. as applied to claim 1, 2 and 9 above, and further in view of Leboe (6,893,755).

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Watkins et al. are as applied, argued and disclosed above, and incorporated herein.

Claims 10 and 16: Watkins et al. do not disclose a pressure sensor within the accumulator.

Leboe in Figure 2 discloses a pressure sensor (16) within the accumulator (col. 6: 32-48 and col. 8: 58-62).

Claim 17: Watkins et al do not disclose a means for determining the rate of change within the accumulator.

Leboe in Figure 4 discloses a means (fuel supply controller 24) for determining the rate of change (col. 9: 16-17) within the accumulator.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of Watkins et al. by incorporating the pressure sensor and means of Leboe because Leboe teach a pressure sensor and a means that would have provided a system for controller the fuel supply, maintaining a stable hydrogen feed pressure, and maintaining a constant current output for extended periods thereby improving the overall efficiency and performance of the fuel cell.

7. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins et al. as applied to claims 1, 2 and 6 above, and further in view of Gottesfeld (6,686,081).

Watkins et al. are as applied, argued and disclosed above, and incorporated herein.

Claim 19: Watkins et al. do not disclose a controller in communication with a control valve.

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Gottesfeld in Figures 2 and 9 disclose a controller (100) in communication with a control valve (28A) col. 6: 60-col. 7: 25, col. 14: 62-64, and col. 15: 23-27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of Watkins et al. by incorporating the controller of Gottesfeld because Gottesfeld teaches a controller that would have provided a means to ensure that a consistent supply of fuel mixture is provided to the fuel cell to enable electricity generating reactions to continue thereby improving overall efficiency and performance.

The recitation “wherein the controller instructs the valve to provide the selective communication” has been considered, and construed as function language that adds no additional structural limitation to the claim. However, the controller of Gottesfeld appears capable of providing the claimed function as Gottesfeld discloses a valve 28a in Figure 2 for controlling fuel flow and that this valve is controlled by controller 100 as shown in Figure 9. See also col. 7: 42-46 and col. 13: 1-4.

Claim 20: The recitation “wherein the controller provides a duty cycle wherein the control valve is open for a first time period and the control valve is closed for a second time period” has been considered, and construed as function language that adds no additional structural limitation to the claim. However, the controller of Gottesfeld appears capable of providing the claimed function as Gottesfeld discloses a valve 28a in Figure 2 for controlling fuel flow that this valve is controlled by controller 100 as shown in Figure 9, and a clock/timer 106 that can be used to control the valve on a timed basis. See also col. 7: 42-46 and col. 13: 1-4.

Claim 21: The recitation “wherein the controller provided a duty cycle based on one or more operating parameters of the system” has been considered, and construed as function language that adds no additional structural limitation to the claim. However, the controller of Gottesfeld appears capable of provided the claimed function as Gottesfeld discloses a valve 28a in Figure 2 for controlling fuel flow that this valve is control by controller 100 as shown in Figure 9, and a clock/timer 106 that can be used to control the valve on a timed basis based on one or more operating parameters such a fuel concentration.

8. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins et al. in view of Merritt et al. as applied to claims 1, 2 and 31 above, and further in view of Gottesfeld (6,686,081).

Watkins et al. and Merritt et al. are as applied, argued and disclosed above, and incorporated herein.

Claim 32: The Watkins et al. combination does not disclose a controller that includes a time.

Leboe in Figure 9 discloses a controller (100) that includes a timer (106).

Therefore, it would have been obvious to one of ordinary skill in the art a the time the invention was made to have modified the apparatus of the Watkins et al. combination by incorporating the controller and timer of Gottesfeld because Gottesfeld teaches a controller and timer that would have provided a means to ensure that a consistent supply of fuel mixture is provided to the fuel cell to enable electricity generating reactions to continue thereby improving overall efficiency and performance.

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The recitation “operates the valve at a specific time” has been construed as function language that adds no additional structural limitation to the claim. However, the controller of Gottesfeld appears capable of provided the claimed function as Gottesfeld discloses a valve 28a in Figure 2 for controlling fuel flow that this valve is control by controller 100 as shown in Figure 9, and a clock/timer 106 that can be used to control the valve on a timed basis. See also col. 7: 42-46 and col. 13: 1-4.

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Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H. Parsons whose telephone number is (571) 272-1290.

The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thomas H Parsons
Examiner
Art Unit 1745

MARK RUTHKOSKY
PRIMARY EXAMINER
FOR PATRICK RYAN
Mark Ruthkosky 3.27.07